

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 2001118489  
PUBLICATION DATE : 27-04-01

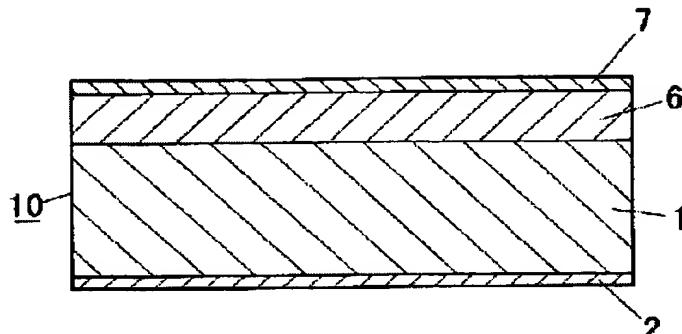
APPLICATION DATE : 18-10-99  
APPLICATION NUMBER : 11295951

APPLICANT : MATSUSHITA ELECTRIC WORKS LTD;

INVENTOR : AIZAWA KOICHI;

INT.CL. : H01J 1/312 H01J 9/02

TITLE : ELECTRIC FIELD RADIATION  
ELECTRON SOURCE AND METHOD  
FOR MANUFACTURING



1 n型シリコン基板  
2 オーム電極  
6 強電界ドリフト層  
7 表面電極  
10 電界放射型電子源

ABSTRACT : PROBLEM TO BE SOLVED: To provide an electric field radiation electron source and method of fabricating it that enhances the electron emission effect with high withstand voltage.

SOLUTION: An electric field drift layer 6 is formed on the main surface of an n-type silicon substrate 1, having a surface electrode 7. An ohmic electrode 2 is formed in the inside of the silicon substrate 1. The strong electric field drift layer 6 is obtained by annealing a porous polycrystalline silicon layer formed by anode oxidizing process in an atmosphere of N<sub>2</sub>O or NO gas at 900°C for an hour. The polycrystalline layer thus obtained has high electron emission efficiency, low defect density, and high withstand voltage compared to the conventional silicon layer.

COPYRIGHT: (C)2001,JPO